UNITED STATES PATENT APPLICATION

for

MONITORING APPARATUS AND METHOD

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MONITORING APPARATUS AND METHOD

BACKGROUND OF THE INVENTION

[0001] Systems capable of remotely monitoring children are now commonplace. These systems, often referred to as "baby monitors," may be used to monitor the activity of a child from a remote location. Typically, baby monitor systems include two devices: one device capable of detecting sounds of the child and transmitting signals representative of those sounds (the "transmitter"); the other device capable of receiving signals from the transmitter and converting them back into audible sounds (the "receiver"). The transmitter may be placed at a location near the child; the receiver may be placed at a location remote from the child. The user of a baby monitor system, such as a parent, may then monitor the activities of the child without being in the child's immediate vicinity. Although baby monitors typically include one receiver, more than one receiver may be used. Additional receivers would allow the parent to monitor the child from multiple remote locations.

[0002] In addition to monitoring the activities of children, baby monitor systems may also be used to monitor the activities of adults or animals. Therefore, terms such as "baby monitor system" or "child monitoring device," or references to a "child" being monitored, are used here merely for convenience when disclosing embodiments of the invention, and shall not in any way limit the scope of the invention to systems used for monitoring children.

[0003] As the inventor has recently learned, before falling asleep young children will often cry for a period of time after being placed into their crib, bed, Pack 'n Play®, etc.

(the child's "cry-time"). After the child's cry-time, the child will typically (hopefully) sleep for an extended period of time. Today's baby monitor systems fail to address the existence of this short period of cry-time before sleep. As a result, during the child's cry-time, the parent must listen to the child's crying on the baby monitor system's receiver, turn down the receiver's volume, or turn off the receiver's power. If the parent chooses to turn down the receiver's volume or chooses to turn off the receiver, there is a good chance that, after the child's cry-time, the parent will forget to return the volume to its normal setting or forget to turn the receiver's power back on. In that case, the baby monitor system is defeated, and, if the child needs attention after his/her cry-time, the parent would not receive any indication.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The present invention will be understood more fully from the accompanying drawings of various embodiments of the invention. These drawings should not be taken to limit the invention to the specific embodiments, but are for explanation and understanding only.

Figure 1 shows an embodiment of an improved monitoring system.

Figure 2 shows an alternative embodiment for the receiver of an improved monitoring system.

Figure 3 shows a further alternative embodiment for the receiver of an improved monitoring system.

Figure 4 shows an example of the operational blocks associated with the receiver of an improved monitoring system.

DETAILED DESCRIPTION OF THE INVENTION

[0005] The present invention will also be understood more fully through the detailed description below. This description should not be taken to limit the invention to the specific embodiments, but is for explanation and understanding only.

[0006] Embodiments of an apparatus and method for temporarily disabling the output of a monitoring system are disclosed. Figure 1 depicts monitoring system **100**, which may consist of two devices: transmitter **120**, placed near a child being monitored, and receiver **150** placed at a location remote from the child. Although baby monitor systems typically include one receiver, the disclosed invention may also apply to each of a plurality of receivers in systems that include more than one receiver.

[0007] Transmitter **120** of monitoring system **100** includes microphone **123** which detects sounds made by a child being monitored. Transmitter **120** converts those sounds into radio frequency (RF) signals **170** which are transmitted from antenna **121** to receiver **150**. Transmitter **120** also includes power switch **122** that controls whether transmitter **120** is powered up and transmitting signals to receiver **150**. Although transmitter **120** in monitoring system **100** is shown using RF signals **170** to communicate with receiver **150**, the claimed invention is not limited to such a communication method. Other wireless and wired communication methods between transmitter **120** and receiver **150** may also be used in conjunction with the claimed invention.

[0008] Receiver **150** of monitoring system **100** includes antenna **151** which receives RF signals **170** from transmitter **120**. As used within current residential baby monitor systems, RF signals **170** are typically outside the AM and FM radio frequency ranges to avoid interfering with household radios. Also, the maximum wireless operating range for current residential baby monitor systems is typically on the order of 500 feet. Receiver **150** converts RF signals **170** to audible sounds which are generated by speaker **155**. Receiver **150** also includes several controls. Power switch **153** determines whether receiver **150** is powered up. Volume control **154** establishes the volume of the sounds generated by speaker **155**.

[0009] Receiver **150** also includes output inhibit button **152**. When pressed, output inhibit button **152** inhibits the output of speaker **155** for a predetermined period of time. At the expiration of that predetermined period of time, speaker **155** is reactivated such that it produces sounds at the volume level established by volume control **154**. If output inhibit button **152** is pressed while the output of speaker **155** is already inhibited, the output of speaker **155** is reactivated as if the predetermined period of time had expired. Alternatively, the pressing of output inhibit button **152** while the output of speaker **155** is already inhibited may reset the running of the predetermined period of time such that the output of speaker **155** is again inhibited for the full predetermined period time. In the latter case, in order to reactivate the output of speaker **155** before the expiration of the predetermined period of time, the receiver power may be cycled from on, to off, to on again.

[0010] Figure 2 shows an alternate receiver embodiment for monitoring system **100**. Receiver **200** includes inhibit time selection switch **201** that allows the user to select from three different lengths of time for which the output of speaker **155** is inhibited. For example, the three selectable times may be 10, 20, and 30 minutes. When output inhibit button **152** is pressed, the output of speaker **155** is inhibited for the length of time selected by inhibit time selection switch **201**.

[0011] Figure 3 shows an alternate receiver embodiment for monitoring system **100** which further includes output inhibit indicator **301**. Output inhibit indicator **301**, which may consist of a light emitting diode (LED), illuminates while the output of speaker **155** is inhibited. Output inhibit indicator **301** remains illuminated until the output of speaker **155** is reactivated.

[0012] Figure 4 shows operational blocks for receiver **150** of monitoring system **100**. Power switch **401** determines whether the circuitry of receiver **150** (i.e., signal receiving circuit **410**, amplification circuit **440**, and output inhibit circuit **422**) is powered on or off. When powered on, signal receiving circuit **410** receives transmitter signals **403** from transmitter **120** through a wired or wireless connection. Amplification circuit **440** receives signals from signal receiving circuit **410** and amplifies those signals in accordance with the level established by volume control **402**. Output inhibit circuit **422**, which may optionally be integrated into amplification circuit **440**, is activated by output inhibit button **420**. When output inhibit circuit **422** is deactivated, it passes the output of amplification circuit **440** to speaker **430**. When output inhibit circuit **422** is activated, it reduces the level of the output of amplification circuit **440** before passing it to speaker

430. Output inhibit circuit **422** may also illuminate output inhibit indicator **431** to indicate when output inhibit circuit **422** is activated. Without the use of inhibit time selector switch **421**, output inhibit circuit **422** is activated for a predetermined period of time, such as 15 minutes. With the use of inhibit time selector switch **421**, output inhibit circuit **422** is activated for the period of time selected by the position of inhibit time selector switch **421**.

[0013] Alternatively, if output inhibit circuit **422** and amplification circuit **440** are integrated into a single circuit, the combined circuit would reduce the amplification level established by volume control **402** during the period of time the output is to be inhibited. The output of such a combined circuit is then passed to speaker **430**.

[0014] Whereas many alterations and modifications of the present invention will become apparent to a person of ordinary skill in the art after having read the foregoing description, it is to be understood that any particular embodiment shown and described by way of illustration is in no way intended to be considered limiting. Therefore, references to details of various embodiments are not intended to limit the scope of the claims.